

CANYON CREEK THINNING ENVIRONMENTAL ASSESSMENT AND
FINDING OF NO SIGNIFICANT IMPACT

Environmental Assessment Number OR-080-03-11

December, 2003

United States Department of the Interior
Bureau of Land Management
Oregon State Office
Salem District
Mary's Peak Resource Area
Polk County, Oregon

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Abstract: This environmental assessment discloses the predicted environmental effects of one action alternative and one no action alternative for federal land located in Township 7 South, Range 6 East, Section 28, Willamette Meridian; and within the Rickreall Creek Watershed. Alternative 1 is the proposed action. One project would be analyzed in this EA. This project is a proposal to conduct density management on approximately 80 acres of 50 year old stands within Adaptive Management Area and Riparian Reserve land use allocation.

FINDING OF NO SIGNIFICANT IMPACT

Introduction

The Bureau of Land Management (BLM) has conducted an environmental analysis (Environmental Assessment Number OR080-03-11) for a proposal to conduct density management on 50-year-old stands which include 64 acres in adaptive management area and 16 acres of Riparian Reserves land use allocation to increase structural diversity. The project area is within Township 7 South, Range 6 West, Section 28, Willamette Meridian.

Implementation of the proposed action would conform to management actions and direction contained in the attached *Canyon Creek Thin Environmental Assessment* (EA). The EA is attached to and incorporated by reference in this Finding of No Significant Impact (FONSI) determination. The project also conforms to the *Salem District Record of Decision and Resource Management Plan* (RMP); *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl and Standards and Guidelines for Management of Habitat for Late Successional and Old Growth Related Species Within the Range of the Northern Spotted Owl* (April 1994); *Record of Decision for Amendments to the Survey and Manage, Protection Buffer, and Other Mitigation Measures Standards and Guidelines* (ROD, January, 2001); the *Implementation of 2002 Survey and Manage Annual Species Review* (March 2003); and the *Final Record of Decision for Western Oregon Program Management of Competing Vegetation* (August 1992).

The EA and FONSI will be made available for public review December 17, 2003 to January 16, 2004. The notice for public comment will be published in a legal notice by the *Polk County Itemizer* newspaper; and posted on the Internet at <http://www.or.blm.gov/salem/html/planning/index.htm> under Environmental Assessments. Comments received by the Marys Peak Resource Area of the Salem District Office, 1717 Fabry Road SE, Salem, Oregon 97306, on or before January 16, 2004 will be considered in making the final decisions for this project.

Finding of No Significant Impact

Based upon review of the EA and supporting documents, I have determined that the Proposed Action is not a major federal action and would not significantly affect the quality of the human environment, individually or cumulatively with other actions in the general area. No environmental effects meet the definition of significance in context or intensity as defined in 40 CFR 1508.27. Therefore, an environmental impact statement is not needed. This finding is based on the following discussion:

Context: Potential effects resulting from the implementation of the proposed action have been analyzed within the context of the Rickreall Creek 5th-field Watershed and the project area boundaries. The proposed action would occur on approximately 80 acres of BLM Adaptive Management Area land, encompassing less than 2 % of the Rickreall Creek Watershed [40 CFR 1508.27(a)].

1. With the implementation of project design features including but not limited to:
 - a. retaining all coarse woody debris and snags, where possible, for wildlife habitat,
 - b. implementing a daily operational time restriction to avoid noise disturbances to wildlife,
 - c. seasonally restricting ground-based yarding and road construction operations to avoid runoff and sedimentation,
 - d. operating some equipment on top of slash and logging debris to minimize compaction,
 - e. installing erosion control measures as needed [water bars, sediment traps in ditch lines, silt fences, straw bales, and grass seeding exposed mineral soil areas],
 - f. establishing stream protection zones adjacent to all project area streams to maintain canopy cover, water quality, and channel morphology,
 - g. decommissioning new construction after the completion of the project,

the proposed action is unlikely to have any significant impacts on vegetation/botany, soils, air quality/fuels, water, fish, riparian reserves, or wildlife resources. Any potential effects to these resources are anticipated to be site-specific and/or immeasurable (i.e. undetectable over the watershed, downstream, and/or outside of the project area) [40 CFR 1508.27(b)(1), EA Chapter II pp. 6-8, Chapter III, pp. (10-18)].

2. The proposed action would not affect
 - a. Public health or safety [40 CFR 1508.27(b)(2)] (EA Table 4);
 - b. Unique characteristics of the geographic area [40 CFR 1508.27(b)(3)] because there are no historic or cultural resources, parklands, prime farmlands, wild and scenic rivers, wilderness, or ecologically critical areas located within the project area;
 - c. Districts, sites, highways, structures, or other objects listed in or eligible for listing in the National Register of Historic Places, nor would the proposed action cause loss or destruction of significant scientific, cultural, or historical resources [40 CFR 1508.27(b)(8)] (EA p.8 Table 4).
3. The proposed action is not unique or unusual. The BLM has experience implementing similar actions in similar areas without highly controversial [40 CFR 1508.27(b)(4)], highly uncertain, or unique or unknown risks [40 CFR 1508.27(b)(5)].
4. The proposed action does not set a precedent for future actions that may have significant effects, nor does it represent a decision in principle about a future consideration [40 CFR 1508.27(b)(6)].
5. The interdisciplinary team evaluated the proposed action in context of past, present and reasonably foreseeable actions [40 CFR 1508.27(b)(7)]. Potential cumulative effects are described in the attached EA. These effects are not likely to be significant because of the project's scope (effects are likely to be too small to be measurable), scale (project area of 80 acres, less than 2% of the total 5th-field watershed), and duration (direct effects would occur over a maximum period of 2-3 years (EA pp.10-18)).
6. The proposed action is not expected to adversely affect endangered or threatened species or habitat under the Endangered Species Act (ESA) of 1973 [40 CFR 1508.27(b)(9)].

Wildlife: There is no northern spotted owl critical habitat in or near the project area. Consultation with the USFWS resulted in a "*May Affect, Not Likely to Adversely Affect*" Determination for northern spotted owl. The proposed action would follow all applicable terms and conditions from the Biological Opinion dated September 30, 2002 [BO# 1-7-02-F-956]. The proposed action would have no effect on marbled murrelets because there is no marbled murrelet habitat in or near the project area.

Fish: The area where the proposed action is located has two streams which flow into Canyon Creek. Canyon Creek provides habitat for Upper Willamette River Steelhead (approximately one mile down stream from the project area), which are listed as threatened under the Endangered Species Act. Consultation with NOAA Fisheries will be conducted under current BLM policy. A "*May Affect, Not Likely to Adversely Affect*" determination due to the small size, scope, and duration of this project was submitted to NOAA Fisheries in the biological assessment. A decision would not be made on this project until a letter of concurrence is received. Upper Willamette River Chinook (also listed as threatened) are down stream several miles from the project area, therefore this project would have no effect on Upper Willamette River Chinook.

7. The proposed action does not violate any known Federal, State, or local law or requirement imposed for the protection of the environment [40 CFR 1508.27(b)(10)] (EA p.1).

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12-3-03
Date

Reviewed by: Carolyn Sands
Carolyn Sands, NEPA

12/3/03
Date

Approved by: Dana Shuford
Dana Shuford, Field Manager
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Dec 10, 03
Date

ENVIRONMENTAL ASSESSMENT

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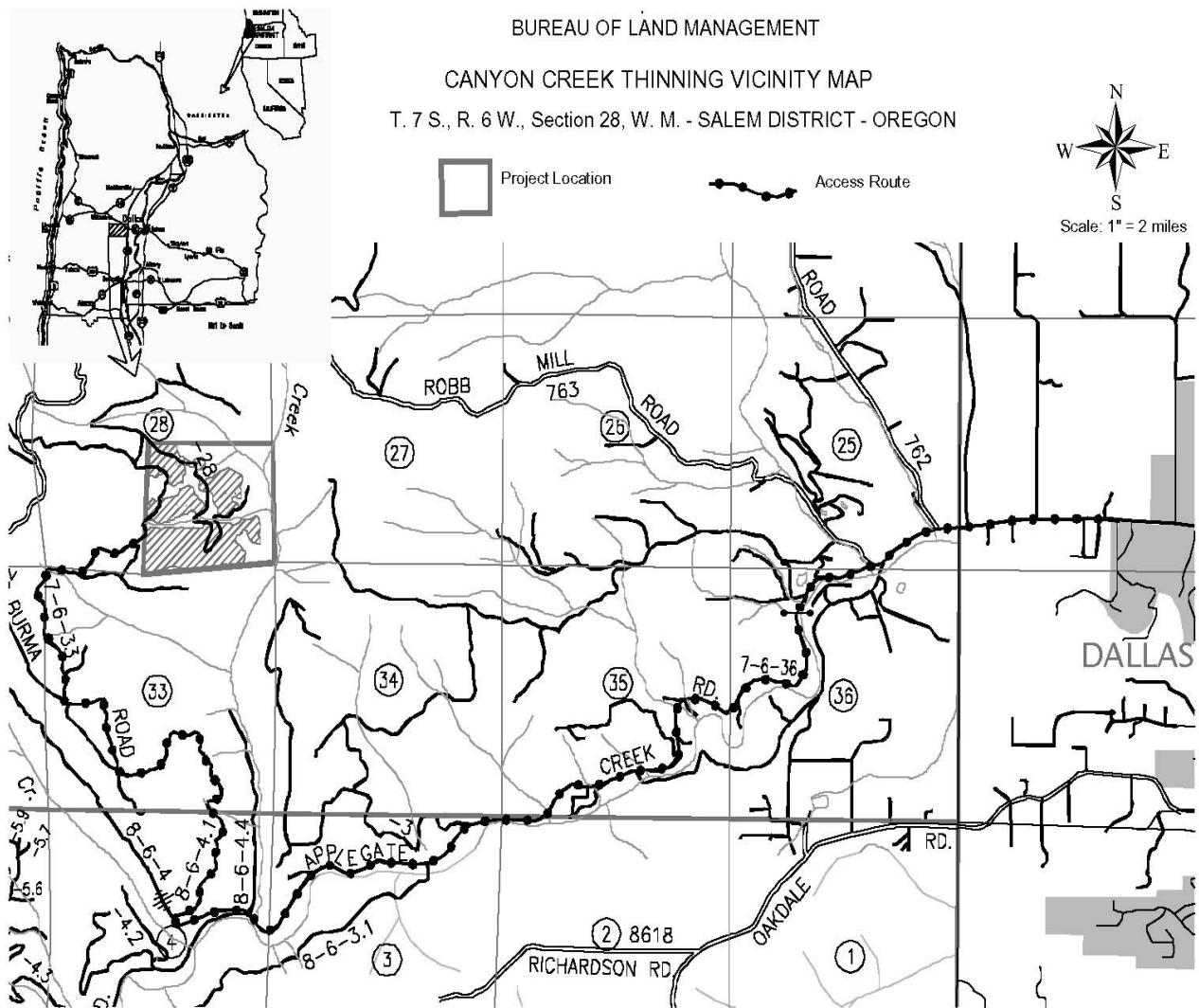
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1.0 CHAPTER 1.0 - PROJECT SCOPE

1.1 Project Location

The project area is located approximately 4 air miles west of Dallas, Oregon, in Polk County on forested land managed by the Marys Peak Resource Area, Salem District of the Bureau of Land Management (BLM). The project area lies within the Rickreall Creek Watershed and is within Township 7 South, Range West, Section 28, Willamette Meridian (Map 1).

Map 1: Vicinity



1.2 Purpose of and Need for Action

Marys Peak Resource Area staff performed a comprehensive, landscape level analysis to determine relative priority of watershed areas within the Resource Area for ecosystem management. Assessments of watershed, wildlife, silviculture, transportation, and ownership conditions were made in comparison with provincial strategies to identify opportunities and needs and their relative urgency. The proposed project area was chosen for density management of forest stands, improvement of late successional habitat for marbled murrelet and northern spotted owl, and for improvement to the watershed and road system.

The proposed project is intended to implement a subset of specific management opportunities that were identified within the *Mill Creek, Rickreall Creek, Rowell Creek, Luckiamute River Watershed Analysis* in a manner consistent with standards and guidelines described below.

1. Enhancing late-successional forest characteristics in relatively uniform dense conifer stands by density management.
2. Increasing amount of terrestrial large down wood.
3. Increasing diameter growth to achieve future potential coarse woody debris and in-stream large wood sources.
4. Testing new management approaches to achieve ecological and economic health and social objectives.
5. Providing a stable timber supply
6. Provide maintenance on surface and drainage structures on roads needed for current and future access.
7. Close and/ or decommission roads where access is not needed within the next 10 years and where they are contributing to resource damage.

There is a need for:

- Reduced tree densities within stands in the project area in order to increase tree diameter growth;
- Increased late successional forest characteristics, including terrestrial down wood.
- A timber sale that could be successfully offered to purchasers, to meet timber harvest target objectives for this year (contributing to a stable timber supply). Additional needs to accomplish this would include:
 - Logging systems appropriate to the topography and to the silviculture prescription
 - Access to the stands appropriate to logging the stand efficiently.
- Roads that are hydrologically stable.

1.3 Plan Conformance and Tiering

The proposed action is in conformance with *Salem District Record of Decision and Resource Management Plan*, May 1995 and tiers to the *Salem District Proposed Resource Management Plan/Final Environmental Impact Statement*, 1994. The project area is within the following land use allocations: Matrix and Riparian Reserves.

The proposed action is also in conformance with *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl and Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl*, April 1994; *Mill Creek, Rickreall Creek, Rowell Creek, Luckiamute River Watershed Analysis*; *Record of Decision for Amendments to the Survey and Manage, Protection Buffer, and Other Mitigation Measures Standards and Guidelines (ROD, January, 2001)*; and the *Implementation of 2002 Survey and Manage Annual Species Review IM#2003-050, March 14, 2003*.

1.4 Decision to be Made

The Marys Peak Field Manager is the official responsible for deciding whether or not to prepare an environmental impact statement, and whether to approve this project as proposed, not at all, or to some other extent.

2.0 CHAPTER 2.0 – ALTERNATIVES

This EA will analyze the effects of the proposed action and no action alternatives. No unresolved conflicts concerning alternative uses of available resources (section 102(2)(E) of NEPA) were identified. No alternatives to the proposed action were identified that would meet the purpose and need of the project (section 1.2) and have meaningful differences in environmental effects from the proposed action.

2.1 Proposed Action

This project consists of conducting density management on approximately 80 acres of a 50 year old stand within adaptive management area and riparian reserves land use allocations. Approximately 72 acres would be thinned from below to achieve an average basal area of 150 sq ft/acre on upland and 120 sq ft/acre in riparian reserves. Eight one acre patch cuts would also be created. The intent of the proposed action is to create stand structural diversity. New road construction, road reconstruction and road renovation are also a part of the proposed action.

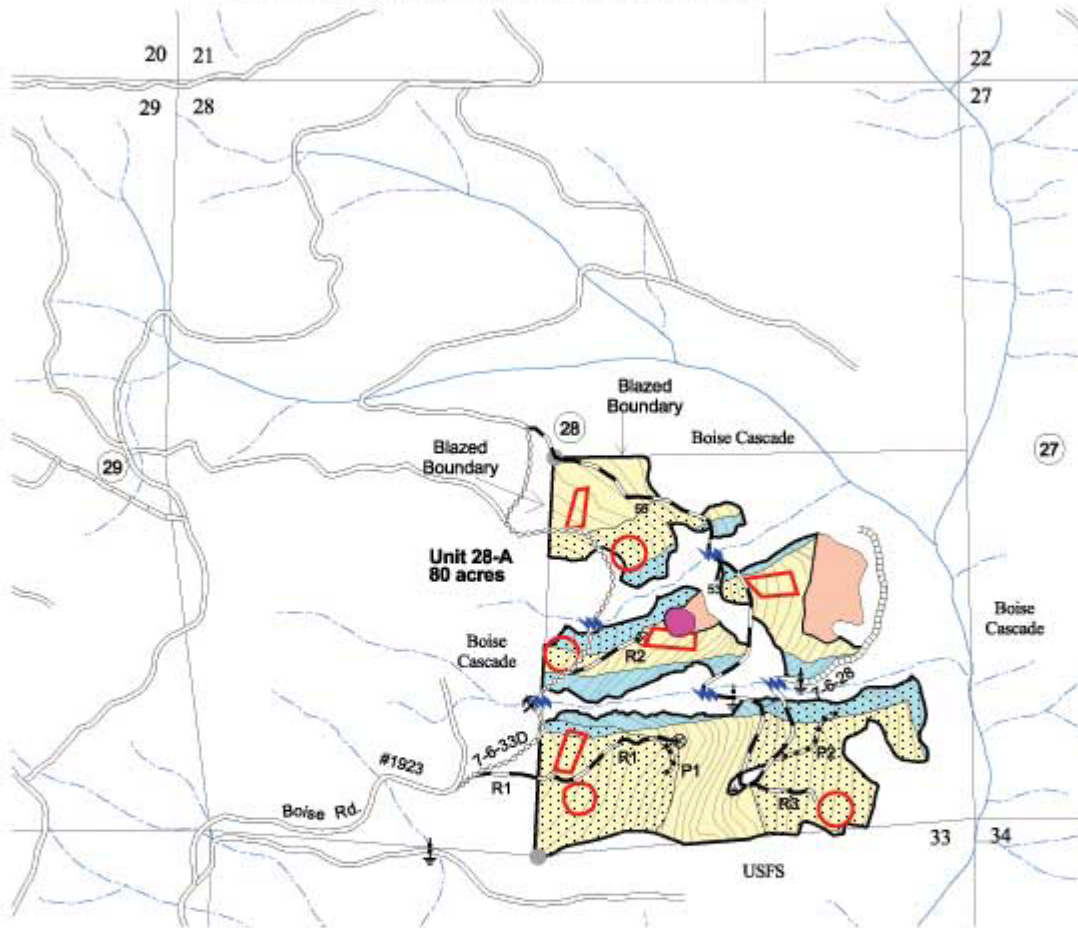
Density management would occur through a timber sale (Canyon Creek thinning). Trees 50 years old would be skyline yarded on approximately 40 acres and ground based yarded on approximately 40 acres.

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BUREAU OF LAND MANAGEMENT

Map 2: Proposed Action

CANYON CREEK THINNING EA MAP

T. 7 S., R. 6 W., Section 28, W. M. - SALEM DISTRICT - OREGON

**LEGEND**

- | | | |
|------------------------------|---|---------------------------------------|
| Wet Area | Partial cut area - ground based yarding | Density Management - Riparian Reserve |
| Borrow pit | Partial cut area - skyline yarding | Drop - logging feasibility |
| Washed out | EA unit 28-A boundary | Fungus Protection Area |
| Stream crossing (no culvert) | Fishbearing Streams | Patch cut |
| Existing Road | Non-Fishbearing Streams | Corner found |
| Road to be decommissioned | Density Management - AMA | |
| Road to be constructed | | |
| Road to be reconstructed | | |
| Road to be renovated | | |

Note: Unit acres do not include existing or new roads.

	Riparian Acres	Upland Acres	Total Acres
Unit 28-A	16	64	80



2.1.1 Connected Actions

- **Road Work:** Road construction of approximately 1000 feet (.2 miles) of new road would occur predominantly on or near ridge top locations. Generally, where grades are 8 percent or less, the roads would be out-sloped. Generally, where grades are 8 percent or more the roads would be constructed with ditches and potentially cross drain culverts. Following harvest all of the new construction would be decommissioned and blocked to vehicular traffic. Decommissioning may include ripping, out-sloping for drainage, waterbarring, debris piling to block access and road surface scuffing utilizing a hydraulic excavator.

A portion of road 7-6-28 which is shown on the EA map would be decommissioned by allowing natural revegetation to occur. This road is stable and has a low risk of erosion.

Road reconstruction may include some tree removal including grubbing, running surface reconstruction, slide and fill failure repair, rock surface application and drainage structure improvements and/or replacements on approximately 9000 feet (1.7 miles) of existing road. Road renovation may include brushing, blading, drainage structure maintenance or improvements and surface rock application on approximately 4 miles of existing roads.

- **Fuels Treatments:** Debris cleared during road construction would be scattered along the length of rights-of-way. Debris accumulation on landings and roads which are a result of yarding unit 28A would be machine piled, covered with plastic and burned under favorable smoke dispersal conditions in the fall, in compliance with the State smoke management plan. Debris accumulations in the patch cuts would be hand piled or excavator piled, covered with plastic and burned under favorable smoke dispersal conditions in the fall, in compliance with the State smoke management plan. In order to mitigate fire risk the area would be monitored for the need of closing or restricting access during periods of high fire danger. During the closed fire season the first year following harvest activities, while fuels are in the “red needle” stage, the entire area would be posted and closed to all off road motor vehicle use.
- **Patch Cut Reforestation:** After operations, patch cuts would be site prepped and planted with a mix of Douglas-fir, western hemlock and western red cedar.
- **Skid Trail Construction:** Constructing new skid trails would be avoided, where possible. New skid trail construction would follow the project design features described in section 2.1.2.
- **Blocking Skid Trails:** After operations, skid trails would be waterbarred and grass seeded to mitigate soil erosion.

2.1.2 Design Features and Mitigation Measures

Season of Operation/ Operating Conditions

Table 1: Season of Operation/ Operating Conditions

Season of Operation or Operating Conditions	Applies to Operation	Objective
July 15-April 15	Yarding outside of road right of ways	Protecting the bark and cambium of residual trees
During periods of low precipitation, generally May 1-October 31	Road Construction	Minimize soil erosion
During periods of low soil moisture, generally July 15-October 15	Ground based yarding	Minimize soil erosion
During periods of dry weather and low soil moisture, generally May 1-October 31	Timber hauling	Minimize soil erosion/ stream sedimentation

Design Features/ Mitigation Measures by RMP Objectives

The following section relates project design features to RMP objectives

1. ***To minimize soil erosion as a source of sedimentation to streams and to minimize soil productivity loss from soil compaction, loss of slope stability or loss of soil duff layer:***
 - Ground based yarding with either crawler tractors or harvester/forwarders would take place on slopes less than 35 percent in Unit 28A.
 - Harvester/forwarder use would require that logs would be transported free of the ground. The equipment would be either rubber tired or track mounted, and have rear tires or tracks greater than 18 inches in width. Yarding corridors would be spaced approximately 60 feet apart and be less than 15 feet in width. Logging debris would be placed in yarding corridors in front of equipment to minimize the need for machines to go on bare soil.
 - Crawler tractor use would require utilization of pre-designated skid trails spaced at least approximately 150 feet apart and utilize existing skid trails as much as practical.
 - Waterbars would be constructed where they are determined to be necessary by the Authorized Officer.
 - All exposed mineral soil areas including new road construction cable/ground-based yarding roads and landing locations would be seeded with Oregon certified (blue tagged) red fescue at a rate equal to 40 pounds per acre. The extent of soil disturbance would be determined in cable yarding corridors at the completion of yarding.

- In the skyline yarding area, one end suspension of logs would be required over as much of the area as possible to minimize soil compaction, damage to reserve trees, and disturbance. Yarding corridors would average approximately 150 feet apart where they intersect boundaries and be 15 feet or less in width. Lateral yarding up to 75 feet from the skyline using an energized locking carriage would be required.

2. To meet the objectives of the “Aquatic Conservation Strategy (ACS)” Riparian Reserves (ACS Component #1):

- Stream Protection Zones of at least 50 ft. would be established along all streams and identified wet areas within the harvest area. These zones would be identified as “Stream Protection Zones” (Reference Appendix A-3 “Criteria for Identifying Stream Protection Zones”)
- To protect water quality, trees would be felled away from all streams within the harvest area. Where a cut tree does fall within a stream protection zone, the portion of the tree within the stream zone would remain in place. No cutting or yarding would be permitted in or through any stream protection zones within the harvest area.

3. To protect and enhance stand diversity and wildlife habitat components:

- Except in patch cuts which are described below, the upland portion of the proposed unit would be thinned to the following average densities:

Unit	Basal Area (BA) (square feet/acre)	Trees/Acre
28A	150	152

- Except in patch cuts which are described below, the riparian reserve portion of the proposed unit would be thinned to the following average densities:

Unit	Average Basal Area (BA) (square feet/acre)	Average Trees/Acre
28A	120 (range 80-160)	100 (range 60-160)

- Priorities for tree marking (upland and riparian) would be based on Marking Guidelines contained within the Silvicultural Prescription and Riparian Reserves report, respectively (see Silvicultural Prescription and Riparian Reserves report in NEPA file).
- Eight one acre patch cuts would be created within the unit by cutting all trees which are less than or equal to twenty-four inches DBH. The patch cuts would be planted with a mix of Douglas-fir, western hemlock and western red cedar. All patch cuts would be located at least 100 feet from streams.
- Except in patch cuts and yarding corridors, species diversity would be maintained by reserving all trees (merchantable and non merchantable) other than Douglas fir.
- In addition to the merchantable Douglas fir which would be designated for cutting, all non merchantable Douglas fir would be designated for cutting.

- All open grown “wolf trees”, existing snags and coarse woody debris would be reserved, except within road rights of way, yarding corridors or for safety reasons. All coarse woody debris would be protected to the greatest extent possible from disturbance during operations. At least 2 trees per acre of the largest diameter possible would be preserved as coarse woody debris from leave trees that must be cut within yarding corridors for safety reasons or harvest operability.
- Within the riparian reserves, additional trees would be reserved around snags and additional trees would be cut around seedlings and understory trees in order to increase spacing variability. The number of additional reserved trees would be approximately equal to the number of additional cut trees, thereby keeping the resulting average basal area at 120 square feet/acre.

4. To protect the residual stand:

- In addition to seasonal restrictions to protect soil, water and wildlife resources, no skidding or yarding would be allowed during the spring growing season (typically April 15 – July 15) when bark and cambium are easily damaged by those operations.

5. To protect Special Status, SEIS Special Attention, or uncommon Plants and Animals :

- Management of Survey and Manage Species found as a result of inventories would be accomplished in accordance with the *Record of Decision and Standards and Guidelines for Amendment to the Survey & Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines* (S&M ROD, January 2001) and the *Final Supplemental Environmental Impact Statement For Amendment to the Survey & Manage, Protection Buffer and other Mitigation Measures Standards and Guidelines* (S & M FSEIS, November 2000) and annual species review 2001 and 2002, BLM information Bulletin Nos. Or-2002-033, Or-2002-050 and Or-2002-064.
- Although not included as a Bureau special status or SEIS special attention plant, the uncommon coral fungus, *Ramaria armenica*, known site would be protected from harvest and is shown on the EA Map as Fungus Protection Area.

6. To protect Cultural Resources:

- No known cultural or paleontological resources occur in the project area. A post-harvest survey would be done upon completion of the project according to *Protocols for Managing Cultural Resources on Lands Administered by the BLM in Oregon*; Appendix D dated August 5, 1998. If any sites are identified during timber harvesting, the operations would be immediately halted and the Field Manager would be notified.
- Operations would be resumed only with the Field Manager’s approval, and only after appropriate mitigation measures are designed and implemented to provide any needed protection of those resources.

2.1.3 Cumulative Actions¹

- BLM is not planning any timber sales within the next ten years in the Rickreall fifth field watershed..
- Considerable private timber harvest and road construction would occur in the Rickreall fifth field watershed.
- Road Maintenance on approximately 10 miles of road would take place.

Affected Resources – Water, Fisheries/ Aquatic Habitat over the next ten years ^{2 3}:

2.2 No Action Alternative

The BLM would not implement any of the Canyon Creek Thinning projects at this time. The local plant and animal communities would be dependent on and respond to ecological processes that would continue to occur based on the existing condition. This alternative serves to set the environmental baseline for comparing effects to the proposed action.

3.0 CHAPTER 3.0 –AFFECTED ENVIRONMENT AND ENVIRONMENTAL EFFECTS

In accordance with law, regulation, executive order and policy, an interdisciplinary team reviewed the elements of the human environment (Tables 4 and 5) to determine if they would be affected by the alternatives described in Chapter 2.0. Those elements of the human environment that were determined to be affected are Soils, Water, Fisheries/Aquatic, Riparian, Vegetation, Wildlife, Air Quality, Fire Hazard/Risk, and Recreation/Visual Quality.

This chapter describes the current condition and trend of those affected elements, and the environmental effects of the alternatives on those elements. For a full discussion of the physical, biological and social resources of the Salem District, refer to the FEIS. The discussion in this environmental assessment is site-specific and supplements the discussion in the FEIS.

3.1 General Setting/ Affected Environment

The area was clearcut (tractor) logged in the 50's and the current over-story throughout is dominated by 50-year old Douglas-fir with scattered hardwoods and approximately 4 snags per acre. Large coarse woody debris is present in decay classes 4 and 5.

¹ Actions with overlapping effects in space and time with the proposed action

² Estimated time of the proposed action's effect on water quality

³ The area of cumulative effects in this case is within the Rickreall Fifth field watershed that would drain into Willamette River:

The area is bordered on the west, north and east by private land. The private land on the west and east has been recently clearcut and the private land on the north has an over-story much like that of the proposed project area. The area to the south is an immature stand on U.S. Forest Service land

Riparian Reserve Habitat: Riparian Reserves within the project area are associated with mid-seral conifer timber types. These stands originate from the logging operations that occurred during the 1950's. Average tree size is approximately 10 inches in diameter and there is an inadequate number of snags.

Aquatic Environment: The Canyon Creek Density Management project area is dissected by two small tributaries that flow into Canyon Creek. These are typical steep headwater streams with steep V-shaped canyons close to Canyon Creek and smaller canyons further upstream. The top half of these tributaries have little or no flow during the hot summer months. No fish are present within these small headwater streams due to steep channels, limited flow and large amounts of colluvial debris.

Streams within the project area have moderate amounts of wood and debris from previous logging activities. The main stem of Canyon Creek contains cutthroat trout (*Oncorhynchus clarkii*) and Sculpin (*Cottus* sp.). The project area is approximately one mile above an anadromous fish barrier. Upper Willamette River Steelhead (*Oncorhynchus mykiss*) use the lower portions of Canyon Creek for rearing and spawning. Upper Willamette River Chinook Salmon (*Oncorhynchus tshawytscha*) are down stream in Rickreall Creek, approximately 10 miles from the project area.

In addition:

- BLM ownership comprises approximately 2 % of the Rickreall watershed.
- The project is not within a municipal or key watershed.
- Slopes present within the proposed harvest area range from 5 to 80 percent and soils are stable. A very small portion of the area has 80 percent slopes. Some residual compaction from old skid trails also exists within the area
- Current fuel loading present in the project area varies from 10 to 30 tons per acre.
- Recreational activities which may occur here include hunting, target shooting, hiking and mountain bike riding.

3.2 Environmental Effects

The following elements of the environment (Appendix 2) are affected by this project: Soils, Water, Fisheries/ Aquatic Habitat/ Riparian, Vegetation, Wildlife, Air Quality, Fuels, Recreation /Visual Quality.

3.2.1 Soils (Site Productivity, Erosion Potential)

(Canyon Creek Thinning Timber Sale Proposal Fuels/Soils Report pp. 1-9)

Proposed Action: New construction of spur roads would result in approximately 0.4 acres of forest land being converted to non-forest (about 0.5% of the total project area). Following harvest these roads would be decommissioned and blocked providing for some partial recovery of the 0.4

acres. Reconstruction of 9000 feet of existing road would result in 4 acres of current non-forest land to remain in a non-forested condition. Several substandard stream crossings would be upgraded to new standards, additional cross drains and / or out sloping of the road surface would lower the risk of surface erosion and fill failures. One portion of failed road prism would be stabilized.

Approximately 2000 feet of the old road would be permanently blocked to vehicle traffic. Four miles of road to be renovated would have road surface conditions improved for better drainage and reduced surface erosion. Culvert and ditch work would reduce the risk for future fill failures.

Skyline and Harvester / Forwarder yarding is expected to result in minimal or no measurable reduction in long term site productivity. Landing construction and tractor yarding is expected to reduce long term site productivity by a maximum of 1.3 % for the total project area.

No Action: Everything would be left in its current state. Existing road conditions would continue to deteriorate possibly leading to new fill failures in the future.

3.2.2 Water

(Canyon Creek Hydrology Report pp.1-11) (Cumulative Effects Analysis for the Lower Rickreall Creek Catchment pp.1-13)

Water Quality (Surface and Ground) (including stream temperature, sedimentation)

Proposed Action

Long-term, measurable effects to watershed hydrology, channel morphology, and water quality as a result of the proposed action are unlikely. This action is unlikely to alter the current condition of the aquatic systems either by affecting its physical integrity, water quality, sediment regime or in-stream flows.

Short-term, localized increases in stream sediment can be expected during reconstruction of stream crossings and restoration of the tributary near the 7-6-28 road.

Tree removal (including patch cuts) and road renovation and construction would not occur on steep, unstable slopes where the potential for mass wasting adjacent to stream reaches is high. Therefore, increases in sediment delivery to streams due to mass wasting are unlikely to result from this action.

In addition, potential impacts resulting from tree harvest and road construction/renovation would be mitigated to reduce the potential for measurable sediment delivery to streams, by implementing Best Management Practices (BMPs), such as stream and road buffers, minimum road widths, minimal excavation, ensuring appropriate drainage from road sites, etc. Because the proposed project would affect only 0.4% of the forest cover in the Rickreall Creek watershed, it is unlikely to produce any measurable effect on stream flows. Within riparian zones, substantial portions of the riparian canopy would be retained, therefore maintaining riparian microclimate conditions and protecting streams from increases in temperature.

In conclusion, this proposal is unlikely to impede and/or prevent attainment of the stream flow and basin hydrology, channel function, or water quality objectives of the Aquatic Conservation Strategy (ACS). Over the long term, this proposal should aid in meeting ACS objectives by speeding the development of older forest characteristics in the riparian reserves.

Cumulative Effects:

The proposed project is unlikely to contribute to cumulative effects to sedimentation or increases of stream temperature, because it is unlikely to produce any measurable effects on these parameters. Because the mechanical removal of vegetation and road construction in a watershed can result in increases in stormflow volume and earlier, higher peak flows, the proposed action was analyzed for its potential effects on peak flows and the potential for stream channel bed mobility and channel scour).

The Level 1 analysis for potential increases to peak flows resulted in an “indeterminate” sensitivity rating; meaning potential cumulative effects leading to increases in peak flows, in conjunction with other likely actions in the Lower Rickreall Catchment (7th-field) during the next decade, should not be ruled out. Consequently, a Level 2 analysis was conducted to analyze whether the predicted increases to peak flows would be large enough to entrain bed material in Canyon Creek. The analysis determined that an increase of a 2-year event of approximately 26% would be needed to entrain the D84 particle size (generally the size used as an indicator of channel forming processes). The level 1 analysis predicted an 18.8% increase in peak flow volume during an unusually large 2-year storm event over a hypothetical full forest condition; this is not high enough to instigate mobility of the stream bed. Consequently, there is a low probability that the proposed action would contribute to cumulative effects to peak flows.

No Action:

The “no action” alternative would result in the continuation of current conditions and trends at this site as described in the Description of Affected Resource section of the hydrology report and in the Rowell Creek/Mill Creek/Luckiamute River Watershed Analysis document.

Road crossing improvements and the restoration of the stream channel at the 7-6-28 road would not take place, thereby impeding the attainment of ACS objectives. Specifically, the physical integrity of the aquatic system, including the stream banks and bottom configuration would not be restored. In addition, high sediment loads would persist from the existing fill material in the stream channel, degrading water quality.

Cumulative effects to the watershed (sedimentation, reduction of canopy cover/shading, reduction of in-stream large wood) would continue to occur from the development of private and other agency lands (primarily timber harvesting and road building).

3.2.3 Fisheries/ Aquatic Habitat

(Canyon Creek Fisheries Report - pp. 1)

Proposed Action

The proposed action would have no measurable adverse impacts to local or anadromous fish and fish/ aquatic habitat. Habitat and channel conditions are expected to be maintained. Impacts

may occur due to small inputs of sediment, but would be short term (a year or less) and would not affect fish or fish habitat either locally or down stream.

Design features such as one end suspension, stream protection zones and seasonal restrictions in conjunction with the small size and amount of logs yarded would keep sediment delivery to a minimal level. Remaining trees, vegetation, duff, and stream protection zones would keep sedimentation into streams to a minimal level. Due to the limited flow in project area streams, stream protection zones (50 foot minimum), remaining trees, and topographic relief (V-shaped canyons), there is very little chance that these streams would increase in temperature.

Trees that remain after thinning would benefit from increased sunlight and would grow fuller crowns allowing them to grow faster. This would increase the amount of future potential quality large diameter wood for in-stream function, complexity and riparian dependant species. Thinning within the riparian reserve also allows for a secondary canopy to establish and more species diversity and complex habitat within the riparian reserve to develop.

A net loss in roads would result due to decommissioning. A portion of road 7-6-28 would not be disturbed and would be considered closed (decommissioned). The road bed is currently stable and covered with forest duff and some vegetation and trees. Drainage on the rest of this road would be improved (culverts installed) and would prevent the current road bed from rerouting water. Old log fills or failed culverts currently do not freely route through the road fill and in some cases streams flow across the bed. Replacing old log fills and failed culverts would decrease the amount of road bed fill that erodes each year into area streams and would allow water to remain in stream channels and not be rerouted down old road beds.

All planned new construction is on ridge tops and would not affect the aquatic environment. The lower portion of P2 (new road construction) is in the upper part of the riparian reserve. However, there is still approximately 150 feet from the proposed road bed to the adjacent stream, and the road bed is on a flat, stable ridge. This road would not affect the aquatic environment due to the distance to the stream and the flat slope of the road.

Cumulative Effects: The Rickreall 5th Field basin is predominantly owned by the state or private commercial logging companies both of which have logged the entire area and will continue to do so in the future. Lower in the basin private land owners have converted the floodplain to areas of agricultural production and urban areas. Small parcels of land are managed by the Forest Service and BLM. All of the BLM lands within this basin are Adaptive Management Areas. Logging and agricultural practices have greatly improved in the last decade. Riparian buffers and seasonal restrictions have improved water quality and habitat conditions. Stream cleaning is no longer a practice. However, assuming timber production and agriculture will remain active in the basin, habitat conditions will only improve at a slow rate as timber and agricultural practices improve and more habitat improvement projects occur in the basin. Short logging rotations and small riparian buffers under the State Forest Practices Act will keep historical quantities of large wood from creating complexity within area streams. Increased road construction within the basin could adversely impact peak flows to area streams (see hydrology report).

The proposed actions' contribution to cumulative effects on fish or fish habitat would be limited due to the small size of the sale (80 acres), (most large trees would be left onsite), all new roads would be decommissioned and thinning the riparian reserves would improve the function and complexity within the Riparian Reserves.

No Action Alternative:

Current stream habitat conditions would continue. Recruitment of quality large woody debris would not be enhanced. Road drainage improvements would not occur and ditch lines that currently run directly into streams would continue to funnel road sediment into area streams.

3.2.4 Riparian

Proposed Action: The proposed action would enhance structural and species diversity; accelerate development of desired tree characteristics; increase long term quality LWD recruitment and increase stand health and stability (Canyon Creek Timber Sale Proposal Riparian Reserves report, p. 3-5). Streamside shading would be maintained. There may be ground level microclimatic changes, but those effects near streams would be avoided by maintaining stream protection zones (Canyon Creek Timber Sale Proposal Riparian Reserves report, p. 5). There may be a short-term increased risk of windthrow, but the risk would be minimized by leaving trees with the best crowns, and leaving them in groups (Canyon Creek Timber Sale Proposal Riparian Reserves Report, p. 5 and Riparian Reserves marking guidelines).

No Action Alternative:

Crown ratios would decrease at a faster rate compared to Alternative 1, resulting in decreased wind firmness and individual tree stability. The canopy would remain closed allowing little light to penetrate to the ground and therefore, based on data from Organon, very little of understory would develop within the next 30 years and beyond without density management (Canyon Creek Timber Sale Proposal Riparian Reserves report, p. 5).

Natural disturbance would be the agent for creation of stand structural diversity. The most likely agent for this disturbance would be wind, which would create openings in patches. It is unknown how long it would take for natural disturbance to create the structural and species diversity needed in this watershed, but it is expected, based on experience and a considerable body of research, that this diversity would take considerably longer to develop than if the proposed treatment were implemented (Canyon Creek Timber Sale Proposal Riparian Reserves report, p. 6).

3.2.5 Vegetation

Stand Structure-upland

(Canyon Creek Density Management Silvicultural Prescription pp.1-8)

Proposed Action

Reducing the density from 213 square feet basal area to an average of 150 square feet basal area would provide leave trees with more light and less competition from adjacent trees.

The growth rate of the leave trees would accelerate compared to untreated trees. The leave trees would maintain larger crowns than would ones in an un-thinned stand. The height to diameter ratio would decrease since diameter growth would increase on leave trees when suppressed trees are removed and light is available in the lower crown. Increased light would also increase the low brush growth. There would be less tree mortality and generally a healthier stand.

The eight patch cut areas site prepared and planted with a mix of species would affect ten percent of the proposed harvest area. Stand species diversity would be increased. The present single story Douglas-fir stand would gain a diverse young stand component with a potential of developing a middle story component over time.

No Action:

Growth model runs indicate individual tree growth would be slower and more mortality would occur in the No Action Alternative compared to the Proposed Action, resulting in slower attainment of desired tree density and stand composition for Adaptive Management objectives. An increase in space and stand structural diversity would not take place without the patch cut treatment. The sparse ground cover and single canopy conditions would remain until the stand begins to self thin as the canopy closes over time, creating small diameter CWD in the short term, and openings in the canopy. Self-thinning would increase the light level in the stand thus increasing ground and shrub growth, but at a later date. The stand would have less vertical structure and poor height to diameter ratio (overcrowded trees tend to develop a condition of small diameter relative to height which makes them prone to wind throw) than the managed stand due to the past crowded stand conditions. The residual trees with reduced crowns size would not be as vigorous as the managed stand.

Invasive, Nonnative Species

(Marys Peak Resource Area Botanical Report pp.5)

Proposed Action Any ground disturbing activity may lead to an increase in the noxious weeds known from the project area. Known species from the area are priority III noxious weeds and are well established and widespread throughout the Mary's Peak Resource Area and the Salem District. Eradication is not practical using any proposed treatment methods. Grass seeding exposed soil areas tends to abate the establishment of noxious weeds. With the implementation of this design feature, effects from noxious weeds are not anticipated. The risk rating for the long-term establishment of noxious weed species and consequences of adverse effects on this project area is low.

No Action:

Without any new human caused disturbances in the proposed project area the established noxious weed populations would remain at their current level.

3.2.6 Wildlife

(Biological Evaluation for Terrestrial Wildlife (pp. 1-4):

Threatened or Endangered Wildlife Species or Habitat

Proposed Action:

The AMA and RR density management prescription for the proposed action would remove the suppressed, intermediate, and smaller co-dominant Douglas-fir and leave the dominant and larger co-dominant conifers. The treatment would remove an average of 132 trees per acre. Since the largest trees with the best crown ratios would be left the post-treatment crown canopy is expected to be 50 percent or greater over most of the action area, retaining dispersal habitat. Currently the stands have some soft and hard snags and coarse woody debris but they are all in the smaller diameter classes. Treatment would decrease the time necessary for the development of larger diameter trees which would provide future hard snags, coarse woody debris, and green wildlife legacy trees. A short term impact would be a simplification of stand structure due to the removal of trees, however, the planned treatment is not expected to have an adverse impact on the composition and function of this mid-seral stand. In order to create some structural diversity in the stand eight small one acre patch cuts would be placed in areas where the existing stocking is most dense. These small opening would have both short and long term positive impacts on wildlife by maintaining structural diversity in the stand..

The short-term negative impacts to owl dispersal habitat would be limited since the thinning would maintain overstory canopy cover above 40 percent, the scattered small openings (1 acre) would not exceed ten percent of the total treatment acres, and the untreated mid-seral matrix forest provides abundant dispersal habitat within the watershed. The long-term impacts of the proposed project on owl habitat would be positive because the forest within the RR would develop into suitable nesting/foraging/roosting habitat sooner than if left un-thinned.

Cumulative Effects:

This action, when added to the past, present, and future actions of others in the watershed, would have limited negative cumulative effects on wildlife habitat or species because the action is small in size and the treatment is light in intensity. The stand is expected to continue to function as mid-seral wildlife habitat after the density management treatment and eight small patch cuts have been completed.

The project occurs in a watershed that is dominated by a checkerboard federal-private ownership pattern. This results in a highly fragmented forest of different aged stands due to the differences in management strategies. The private industrial forest acres within the watershed are currently harvested sometime during the mid-seral stage of habitat development. Under current management regimes, these private lands will never provide late-seral (80-199 years old) or old-growth (200+ years) forest habitat. Federal AMA lands outside of riparian reserves will also provide early and mid-seral habitat patches. Federal RR lands will be managed to provide for late-seral and old-growth for species dependent upon older forest structure. The RR lands will also function as landscape corridors for more wide ranging species by providing mature forest connectivity between different aged patches throughout the watershed as they connect with stream buffers on private lands.

The creation and management of RR on federal lands would have a positive cumulative impact on wildlife in this watershed. The current forest matrix (the dominant seral stage across the landscape) is comprised of mid-seral habitat.

No Action: Under the no action alternative the uniform, single layered, mid-seral stands would continue to grow and develop into late-seral size and structure at a slower rate than if released through thinning. There would be no impacts to the mid-seral dependent wildlife species currently using these stands for nesting, foraging, dispersal, resting, and escape habitat. Species dependent on more complex structure would avoid these stands for a longer period of time.

3.2.7 Air Quality

(Canyon Creek Thinning Timber Sale Proposal Fuels/Soils Report pp. 8)

Proposed Action: Pile burning may decrease air quality for one or two days by increasing the amount of smoke in the air in the vicinity of the piles. No impacts to air quality in the Willamette valley are expected due to the fact that burning would be done in the fall under good atmospheric mixing conditions when the threat of impacts would be low.

Cumulative Effects: Cumulative effects from burning on air quality would be the same as for this individual project.

No Action: The current state of air quality conditions in the project area would continue. Current air quality is weather dependent and this area is not in a stagnant air shed.

3.2.8 Fire Hazard/Risk

(Canyon Creek Thinning Timber Sale Proposal Fuels/Soils Report pp. 1-9)

Proposed Action: The increase in slash created by the proposed thinning would result in a higher risk of fire on the thinned sites following logging. The dead fuel loading would be expected to increase by 5 to 15 tons per acre with a discontinuous arrangement. Risk would be greatest during the first year “red needle stage”. Fire risk along the roads would be reduced when slash piles are burned off. Risk would decline within three years following harvest as needles and twigs detach and break down. Initiation and growth of under story vegetation would combine with break down of the slash and continue the decline in fire risk back to normal levels within 15-20 years following harvest.

No Action: With no treatment everything would be left in its’ current state.

3.2.9 Recreation/Visual Quality

(Canyon Creek Visual, Recreation and Rural Interface Input pp.1-3)

Recreation

Proposed Action: Any recreational use of the proposed unit would be restricted in the short term during the thinning operation. A forest setting would still be maintained, and vegetation disturbed by logging activities would be expected to return within five years. The thinning of the unit would open up the stand, which may make it easier to walk through the units and provide forage for big game animals. Recreational use of the unit behind gates is expected to remain low.

No Action: With the exception of unexpected changes (i.e. wildfire or disease), the proposed unit would continue to provide a forest setting for dispersed recreational activities. A short-term increase in log truck traffic, or other disturbances related to the harvest of the unit would not occur. Log truck traffic from other lands in the vicinity would most likely still occur.

Visual Quality

Proposed Action: The project area is classified as VRM class IV. Changes to the landscape character are expected to be low and would comply with Class IV guidelines. Most of the disturbance would be associated with modifications to vegetation. The proposed thinning would maintain some canopy cover. Created patch cuts are expected to return to a more natural appearance within five years as disturbed vegetation returns. There would also be some short-term (days) decline in visual quality as a result of the smoke created if debris piles are burned. The unit would be burned in compliance with state smoke management regulations.

Cumulative Effects: There is no cumulative effect on Visuals. The proposed action of thinning with dispersed patch cuts would not alter the landscape.

No Action: With the exception of unplanned changes (i.e. wildfire, disease etc.), no modifications to the landscape character of the proposed unit would be expected to occur. Modifications to the landscape character in the general area around the unit would still be expected, as a result of harvesting activities on other lands.

4.0 CHAPTER 4.0 - LIST OF PREPARERS

Table 6: List of Preparers

Resource	Name	Initial	Date
Ecology/ACEC	Hugh Snook	HS	12-2-03
Cultural Resources	Tom Vanderhoof	TMV	12-3-03
Hydrology/Water quality	Ashley La Forge	ALF	12-3-03
Soils	Tom Tomczyk	TST	12-2-03
Riparian Ecology	Amy Haynes	AH	12/3/03
Vegetation (upland stand structure)	Bill Caldwell	BC	12-2-03
Botany TES and Special Attention Plant Species	Ron Exeter	R.E.	Dec 2 2003
Wildlife TES and Special Attention Animal Species	Gary Licata	GL	12-2-03
Fire	Tom Tomczyk	TST	12-2-03
Fisheries	Steve Liebhardt	SL	12/2/03
Wild and Scenic Rivers/ Wilderness	NA		
Recreation Sites and Visual Resources Management and Rural Interface	Traci Meredith	TMM	12/3/03
NEPA / Plans	Carolyn Sands	CS	12/3/03

5.0 CHAPTER 5.0 – CONTACTS AND CONSULTATION

5.1 Agencies, Organizations, and Persons Consulted

5.1.1 Consultation

1. ESA Section 7 Consultation -

a. **US Fish and Wildlife Service** - The Canyon Creek proposal has been consulted upon under the *Programmatic Biological Assessment in the North Coast Province for Fiscal Year 2003-2004 Projects Which Would Modify the Habitats of Bald Eagles, Northern Spotted Owls, and Marble Murrelets* (July 24, 2002). A biological opinion was issued by the US Fish and Wildlife Service based upon the information provided in the biological assessment (FWS reference # 1-7-02-F-956).

a. **NOAA Fisheries (NMFS)** - Consultation with NOAA Fisheries is required for projects that 'may affect' listed species. Consultation with NOAA Fisheries would be conducted under current BLM policy and is expected to be completed by January 31, 2004. A "not likely to adversely affect" call has been submitted for Upper Willamette River Steelhead.

2. Cultural Resources - Section 106 Consultation and Consultation with State Historical Preservation Office:

Under the Cultural resource Survey guidelines, pre-project surveys are no longer undertaken. The guides are based on the results of the Protocol for Managing Cultural Resources on Lands Administered by the Bureau of Land Management: Appendix D – "Coast Range Inventory Plan". The "Plan" in part states; "the lack of important historic properties found by previous inventories concluded that the chances of finding important historic properties in the area so minimal that further expenditure of agency funds for cultural resource surveys prior to project implementation are not justified".

5.1.2 Public Scoping and Notification

1. **Tribal Governments, Adjacent Landowners, General Public, and State County and local government offices:** A scoping letter dated April 14, 2003 was sent to 54 potentially affected and/or interested individuals, groups, and agencies. – One letter was received during the scoping period. This letter with our response is available for review in Appendix 1 Scoping Letter Comments.
2. **30-day public comment period** – The EA and FONSI will be made available for public review from December 17, 2003 to January 16, 2004. The notice for public comment will be published in a legal notice by local newspapers of general circulation (*Polk County Itemizer Gazette Times*); sent to those individuals, organizations, and agencies that have requested to be involved in the environmental planning and decision making processes; and posted on the Internet at <http://www.or.blm.gov/salem/html/planning/index.htm> under Environmental Assessments. Comments received in the Marys Peak Resource Area Office, 1717 Fabry Road SE, Salem, Oregon 97306, on or before January 16, 2004 at 4:00 PM, Pacific Daylight Saving Time, will be considered in making the final decisions for these projects.

6.0 CHAPTER 6.0 – MAJOR SOURCES AND GLOSSARY

6.1 Major Sources :

Caldwell, W. 2003. *Canyon Creek Density Management Silviculture Prescription* Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR.

Exeter, R. 2003. *Marys Peak Resource Area Botanical Report*. Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR.

Haynes, A. 2003. *Canyon Creek Timber Sale Proposal Riparian Reserves Report*. Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR.

La Forge, A. 2003. *Canyon Creek Hydrology Report*. Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR.

Licata, G. 2003. *Biological Evaluation for Terrestrial Wildlife*, Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR.

Liebhardt, S. 2003. *Canyon Creek Thinning Project Fish EA Input*. Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR.

Meredith, T. 2003. *Canyon Creek Visual, Recreation and Rural Interface Input*. Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR.

USDA. Forest Service., USDI. Bureau of Land Management. 1994. *Final Supplemental Environmental Impact Statement Management of Habitat for Late Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl*. Portland, OR.

USDI. Bureau of Land Management. 1998. *Mill Creek, Rickreall Creek, Rowell Creek, Luckiamute River Watershed Analysis*

Salem, OR. USDI. Bureau of Land Management. 1995. *Salem District Record of Decision and Resource Management Plan*. Salem, OR.

USDI. Bureau of Land Management. 1994. *Salem District Proposed Resource Management Plan/Final Environmental Impact Statement*. Salem, OR.

USDI. Bureau of Land Management. 1992. *Final Record of Decision for Western Oregon Program Management of Competing Vegetation*. (August 1992).

USDI. Fish and Wildlife Service 2002. *Programmatic Biological Assessment in the North Coast Province for Fiscal Year 2003-2004 Projects Which Would Modify the Habitats of Bald Eagles, Northern Spotted Owls, and Marbled Murrelets*. Biological Opinion – FWS reference: 1-7-02-F-956]. Portland, OR.

6.2 Glossary

Aquatic Conservation Strategy (ACS) - The Aquatic Conservation Strategy was developed to restore and maintain the ecological health of watersheds and aquatic ecosystems contained within them on public lands. The strategy would protect salmon and steelhead habitat on federal lands managed by the Forest Service and the Bureau of Land Management within the range of the Northern Spotted Owl. The Aquatic Conservation Strategy is designed to meet nine objectives. Compliance with the Aquatic Conservation Strategy objectives means that an agency must manage the riparian-dependent resources to maintain the existing condition or implement actions to restore biological and physical processes within their ranges of natural variability.

Best Management Practices(BMP) - Those practices utilized by the Bureau of Land Management (located in appendix C of the *RMP*) that are intended to maintain or improve water quality and soil productivity.

Coarse Woody Debris (CWD) - Tree or portion of a tree that has fallen or was cut and left in the woods to contribute to a variety of ecosystem functions. Usually refers to pieces at least 20 feet long and 20 inches in diameter at the large end.

Diameter at Breast Height (DBH) - The diameter of a tree 4.5 feet above the ground on the uphill side of the tree.

Endangered Species Act (ESA) - An Act of Congress in 1973 that defines the criteria for species that are in danger of extinction throughout all or a large portion of its range.

Environmental Assessment – A concise document showing a systematic process of developing reasonable alternatives; and predicting the probable environmental consequences of a proposed action and the alternatives.

ESU - see “Evolutionarily Significant Unit”

Evolutionarily Significant Unit - A population that is reproductively isolated from other conspecific populations and represents an important component in the evolutionary legacy of the biological species.

Geographic Positioning System (GPS) - A hand-held electronic instrument that allows the user to locate his/her position on the surface of the earth, by using information gathered from satellites.

Interdisciplinary Team (IDT) - A group of resource specialists who conduct the environmental assessments.

MMBF - Million Board Feet. A board foot is a unit of measure used to quantify commercial lumber; it measures 1 foot x 1 foot x 1 inch.

MBF - Thousand Board Feet. A board foot is a unit of measure used to quantify commercial lumber; it measures 1 foot x 1 foot x 1 inch.

National Environmental Policy Act (NEPA) - The basic national charter for the protection of the environment. It establishes policy, sets goals (section 101), and provides means (Section 102) for carrying out the policy.

New road construction - Construction of a road where there previously has not been a road. i.e.: no indication of an historic road bed (indicators may include: excavation scaring and human caused alteration of the topography; vegetation such as alder growing in or along the old road; indications of a rocked surface or soil compaction; or altered flow of surface water not attributed to natural causes.

Permanent road - Permanent roads are those roads that are used and/or not decommissioned after the contract is terminated.

Road - A transportation facility originally constructed to be used primarily by vehicles having four or more wheels. It is documented as such by the owner, and [may be] maintained for regular and continuous use (CFR 9100). The level of maintenance is generally dependent on available funding.

Road Reconstruction - Work done, in varying amounts, to an existing road (bed) which restores it to a condition that meets present need and construction standard. Reconstruction may incorporate some of the following: brushing, clearing and grubbing, excavation, widening, rocking, blading, subgrade compaction,

Riparian Reserves (RR) - A Federal (BLM or USFS) land-use allocation which overlays all other land allocations. They are lands along streams and unstable and potentially unstable areas where special standards and guidelines direct land use.

Riparian Zones - Those parts of the riparian reserves where actual riparian conditions exist.

Salem District Record of Decision and Resource Management Plan (May 1995) (RMP) - The Management Plan that addresses resource management on all Bureau of Land Management administered land within the Salem District.

Scoping - An ongoing process to determine the breadth and depth of an environmental analysis.

Snags - Any standing dead, partially dead, or defective (cull) tree at least 10 inches in diameter at breast height and at least 6 feet tall. A hard snag is composed primarily of sound wood, generally merchantable. A soft snag is composed primarily of wood in advanced stages of decay and deterioration, generally not merchantable.

Soil compaction - The increase in soil density (reduction of total porosity) that results from the rearrangement of soil particles in response to applied external forces such as traffic by heavy machinery.

Soil displacement - The mechanical movement of the upper organic and mineral surface by equipment and movement of logs. It involves excavation, scalping, exposure of mineral soil and burial.

Survey and Manage (S&M) - A group of species that were defined in the Northwest Forest Plan that have special protection measures associated with them.

Temporary road - Temporary roads are those roads that used for longer than one dry season but are decommissioned by the end on the contract.

Units of Measure - A measure is an indicator of a variable; a yardstick to determine how the variable is moving (being changed or being altered) relative to an established base point and how the variable is being affected or the change occurring

7.0 Appendices

7.1 Appendix 1: Scoping Letter Comments

1. Source: ONRC letter (6/13/03) (see project file)

- a. Comment: No new road construction

Response: Some new road construction is necessary for operability due to topography present in the project area. Best Management Practices would be followed during road construction to reduce the risk of adverse effects to aquatic resources.

- b. Comment: Avoid activities that result in yarding corridors, roads, or other yarding activities impacting water quality and aquatic habitat.

Response: The project would be designed with as few yarding corridors and roads as possible and still maintain operability. Design features to further reduce potential effects to water quality are described in Chapter 2.1.2 Design Features and Mitigation Measures.

- c. Comment: Control the spread of invasive species and reduce fine fuel loads

Response: These measures have been incorporated into the project design features (Chapter 2.1.2 Design Features and Mitigation Measures).

- d. Comment: Avoid harvest and road construction in Roadless / Wilderness areas

Response: This project is not within roadless or wilderness area.

- e. Comment: Avoid commercial timber harvest, roads, and mining in late seral forest.

Response: The project area is not in late seral forest.

- f. Comment: Avoid commercial harvest activities in key or municipal watersheds.

Response: The project area is not in a key or municipal watershed.

- g. Comment: A full range of action alternatives should be considered for this sale.

Response: The interdisciplinary team analyzed alternatives appropriate to the scope of this project (EA sect. 2.0)

- h. Comment: We have concerns about Lynx (letter 1/11/2000).

Response: The project area is not within Lynx habitat.

7.2 Appendix 2: Elements Review Summary

Table 4: Critical Elements of the Human Environment (BLM H-1790-1, Appendix 5)

Critical Elements Of The Environment	Status: (i.e., Not Present , Not Affected, or Affected)	Does this project contribute to Cumulative Effects? Yes/No/NA	Remarks or Environmental Effects (if not affected – why) if Affected (summary of environmental effects)
Air Quality	Affected	Yes	Effects to air quality are described in EA section 3.2.7 (Canyon Creek Thinning Timber Sale Proposal Fuels/Soils Report pp. 8)
Areas of Critical Environmental Concern	Not Present	NA	
Cultural, Historic, Paleontological	Not Affected	NA	Cultural Resource sites in the Coast Range, both historic and prehistoric, occur rarely. Of the Salem District's Resource Area's, the fewest sites have been found on / in Mary's Peak Resource Area This is probably due to its very rugged steep terrain, rainforest vegetation, inaccessibility, and lack of attractive resource utilization opportunities, in historic and perhaps prehistoric times. (Cultural Resource/ Archeological Report pp.1)
Prime or Unique Farm Lands	Not Present	NA	
Flood Plains	Not Present	NA	
Native American Religious Concerns	Not Affected	NA	No Native American religious concerns were identified during the public scoping period.
Threatened or Endangered Plant Species or Habitat	Not Present	NA	(Marys Peak Resource Area Botanical Report pp. 1-6)
Threatened or Endangered Animal Species or Habitat	Northern Spotted Owl - Affected Marbled Murrelet – Not Affected	Yes	(Biological Evaluation for Terrestrial Wildlife pp. 1-4) Effects to northern spotted owl are described in EA section 3.2.6. The thinning and density management project would have no impact on marbled murrelet potential or suitable habitat and would not create a noise disturbance to nesting murrelets. The long-term impact of density management on murrelet habitat in the Riparian Reserve would be positive as it would develop into suitable habitat sooner then if left unthinned.
Threatened or Endangered Fish Species or Habitat	Affected	No	Effects to Threatened or Endangered Fish Species or Habitat are described in EA section 3.2.3.
Hazardous or Solid Wastes	Not Present		
Vegetation (Stand Structure-upland)	Affected	No	(Canyon Creek Density Management Silvicultural Prescription pp.1-8) Effects to Vegetation (Stand Structure-upland) are described in EA section 3.2.5

Critical Elements Of The Environment	Status: (i.e., Not Present , Not Affected, or Affected)	Does this project contribute to Cumulative Effects? Yes/No/NA	Remarks or Environmental Effects (if not affected – why) if Affected (summary of environmental effects)
Water Quality (Surface and Ground) (including stream temperature, sedimentation)	Affected	Yes	Effects to Water Quality (Surface and Ground) (including stream temperature, sedimentation) are described in EA section 3.2.2 (Canyon Creek Hydrology Report pp.1-11) (Cumulative Effects Analysis for the Lower Rickreall Creek Catchment pp.1-13)
Wetlands/Riparian (including structural diversity)	Riparian Affected Wetlands not present	No	(Canyon Creek Timber Sale Proposal Riparian Reserves report, p. 5) Effects to Riparian Zones (including structural diversity) are described in EA section 3.2.4
Wild and Scenic Rivers	Not Present		
Wilderness	Not Present		
Invasive, Nonnative Species	Affected	No	(Marys Peak Resource Area Botanical Report pp.5) Effects to invasive/nonnative species are described in EA section 3.2.6
Environmental Justice	Not Affected		The proposed action is not anticipated to have disproportionately high and adverse human health or environmental effects on minority populations and low-income populations.
Adverse Impacts on the National Energy Policy	Not Affected		This is not an energy project

Table 5: Other Elements of the Human Environment

Other Elements Of The Environment	Status: (i.e., Not Present , Not Affected, or Affected)	Does this project contribute to Cumulative Effects? Yes/No	Remarks or Environmental Effects (if not affected – why) if Affected (summary of environmental effects)
Coastal zone	Not present		
Fire Hazard/Risk	Affected	No	(Canyon Creek Thinning Timber Sale Proposal Fuels/Soils Report pp. 1-9) Effects to Fire Hazard/Risk are described in EA section 3.2.8
Fish Species with Bureau Status and Essential Fish Habitat	Affected	Yes	Effects to Fish Species with Bureau Status and Essential Fish Habitat are described in EA section 3.2.3
Late successional and old growth species habitat and ecosystems	Not present		
Mining claims, mineral leases, etc	Not Present		
Recreation	Affected	No	(Canyon Creek Visual, Recreation and Rural Interface Input pp.1-3) Effects to Recreation are described in EA section 3.2.9
Rural Interface Areas	Not Present		

Other Elements Of The Environment		Status: (i.e., Not Present , Not Affected, or Affected)	Does this project contribute to Cumulative Effects? Yes/No	Remarks or Environmental Effects (if not affected – why) if Affected (summary of environmental effects)
Soils (Site Productivity and Erosion Potential)		Affected	NA	(Canyon Creek Thinning Timber Sale Proposal Fuels/Soils Report pp. 1-9) Effects to Soils (Site Productivity and Erosion Potential) are described in EA section 3.2.1
Special Areas (Within or Adjacent)		Not Present	NA	
Special Status and SEIS Special Attention Plant Species/Habitat (including Survey and Manage) (RMP pages 28-33, Appendix B-1:1- B-2:4)		Not Present	NA	(Marys Peak Resource Area Botanical Report pp.1-6) Based on survey results: There are no “known” sites of any special status or special attention vascular plants, lichens, bryophytes, nor were any found during subsequent surveys. There are no “known” sites of any special status or special attention fungi, nor were any found during subsequent surveys. A pre-field review determined that suitable habitat for <i>Bridgeoporous nobilissimus</i> does not exist within the project area and a survey was not warranted.
SEIS Special Attention Wildlife Species/Habitat – except threatened and endangered (RMP pages 28-33, Appendix B-1:1- B-2:4)		Not Present	NA	Wildlife Report (pp. 1-4) <i>Surveys were required and conducted for:</i> Mollusks. <i>Survey results:</i> no sites found. Not red tree vole habitat Surveys not required. The proposed action would not affect mollusk or red tree vole habitat as neither habitat is present in the project area.
Visual Resources		Affected	No	(Canyon Creek Visual, Recreation and Rural Interface Input pp.1-3) Effects to Visual Resources are described in EA section 3.2.9 There is no cumulative effect on Visuals or Recreation. The proposed action of thinning with dispersed patch cuts would not alter the landscape.
Water Resources	Aquatic Conservation Strategy Objectives	Affected	NA	(Canyon Creek Hydrology Environmental Assessment pp.1-11) Effects to Aquatic Conservation Strategy Objectives are described in EA section 3.2.3, 3.2.4, and Appendix 5.
	Other water components (DEQ 303d listed stream, DEQ 319 assessment, water quantity)	Not Affected	NA	(Canyon Creek Hydrology Environmental Assessment pp.1-11) Because impacts to water quality are likely to be immeasurable they are not likely to affect listed streams downstream

Other Elements Of The Environment		Status: (i.e., Not Present , Not Affected, or Affected)	Does this project contribute to Cumulative Effects? Yes/No	Remarks or Environmental Effects (if not affected – why) if Affected (summary of environmental effects)
	Downstream Beneficial Uses (Salem FEIS pp. 3-9)	Not Affected	NA	(Canyon Creek Hydrology Environmental Assessment pp.1-11) There are no known municipal or domestic users in the project area. There are no water rights listed for Canyon Creek. Water rights are listed for Rickreall Creek approximately 3 miles downstream from the project area for domestic use, fish, irrigation and a registered groundwater point of diversion (WRIS 03). Best management practices and design features would be in place to mitigate any potential effects to beneficial uses.
	Key Watershed (ACS component 2)	Not Present	NA	

7.3 Appendix 3: Criteria for Identifying “Stream Protection Zones

- 1) A Stream Protection Zone would be flagged to exclude the following areas based on field identified features.
 - a. Slope break- point below which the slope is actively eroding and contributing sediment to the stream.
 - b. Floodplain- flat, accessed by the stream once every one or two years.
 - c. Stream banks- feature which contains the “active” stream channel.
 - d. High water tables- flat, mushy soils, skunk cabbage, standing water, etc..
 - e. Flood prone- 2 x max depth @ bankfull (for streams with none of the above).
- 2) If none of the above features apply, a minimum width of approximately 50 feet would be flagged.
- 3) “Minimum” would be modified based on associated issues or field identified risks. Examples include-
 - a. Perennial streams at risk for temperature increases due to the action (i.e., southern aspect, low topographic relief, vegetation provides shading). We can either extend the minimum to 100 feet at these sites or apply a model to get more precision in our estimate.
 - b. Unstable slopes- this is open to discussion. We may want to thin along debris torrent prone headwater channels even though they are potentially “unstable” because these areas are LWD source areas. However, actively eroding sites adjacent to streams with ravel on the surface and “jack-strawed” trees may be excluded.
 - c. “Sensitive” streams- sand bed channels or channels with high residual impacts (bank erosion, incision, heavy fine sediment load, etc) may warrant extra protection.

Appendix 4: Aquatic Conservation Strategy Objectives Review Summary

(Proposed Action only)

(Note - See RMP pg 5-6 for more detailed explanations of the ACS objectives)

ACS Objective	How The Proposed Action Meets the ACS Objective
1. Maintain and restore distribution, diversity, and complexity of watershed and landscape features to ensure protection of aquatic systems.	Riparian Reserves in the analysis area as a whole are characterized by lack of late-seral and old-growth habitat. Riparian stands older than 80 years account for 16 percent of the analysis area's total riparian acreage. (<i>Rowell Creek/Mill Creek/Rickreall Creek/Luckiamute River Watershed Analysis [RWA]</i> , USDI BLM. September, 1998, p. R&CC-19). The watershed also generally lacks large woody debris (<i>RWA</i> , p.R&CC-46). The proposed density management project would be a means to enhance late-successional forest conditions and speed up attainment of these conditions across the landscape. Since Riparian Reserves provide travel corridors and resources for aquatic, riparian dependant and other riparian and/or late-successional associated plants and animals, the increased structural and plant diversity would ensure protection of aquatic systems by maintaining and restoring the distribution, diversity and complexity of watershed and landscape features.
2. Maintain and restore spatial connectivity within and between watersheds.	<p>Long term connectivity of terrestrial watershed features would be improved by enhancing conditions for understory development (structural diversity), increasing the proportion of minor species in the stand (species diversity), and increasing growth rates on remaining trees. In time, these reserves would improve in functioning as refugia for late successional, aquatic and riparian associated and dependent species.</p> <p>No stream crossing culverts would be used that would potentially hinder movement of aquatic species; therefore no aquatic barriers would be created.</p> <p>Both terrestrial and aquatic connectivity would be maintained, and over the long-term, as Riparian Reserves develop late successional characteristics, lateral, longitudinal and drainage connectivity would be restored.</p>

ACS Objective	How The Proposed Action Meets the ACS Objective
3. Maintain and restore physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.	<p>A no cut stream protection zone (SPZ) would maintain the integrity of shorelines, banks and bottom configurations. Criteria used to designate SPZ's were riparian vegetation, major slope breaks, active floodplain or high water tables, and areas contributing to stream shading. All SPZ's are a minimum of approximately 50 feet. Trees would be directionally felled within one tree height of SPZ's and any part that falls within them would remain (EA p. 10), thereby preventing disturbance to stream banks and bottom configurations.</p> <p>This action is unlikely to alter the current condition of the aquatic systems either by affecting its physical integrity, water quality, sediment regime or in-stream flows (EA p. 11).</p> <p>Long-term measurable effects to watershed hydrology, channel morphology, and water quality as a result of the proposed action are unlikely (EA p. 11)</p>
4. Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems.	<p>Stream temperature: Due to the limited flow in project area streams, stream protection zones, remaining trees, and topographic relief (v-shaped canyons), there is very little chance that these streams would increase in temperature (EA p. 14). Within riparian zones, substantial portions of the riparian canopy would be retained, therefore maintaining riparian microclimate conditions and protecting streams from increases in temperature (EA p. 11). Sedimentation and stream turbidity: Impacts may occur due to small inputs of sediment, but would be short-term (a year or less) and would not affect fish or fish habitat either locally or down stream (EA p. 12). All timber hauling and road construction would be restricted if necessary to avoid excessive increases in sedimentation (EA p. 8).</p> <p>Tree removal and road renovation/construction would not occur on steep, unstable slopes where the potential for mass wasting adjacent to stream reaches is high. Therefore, increases in sediment delivery to streams due to mass wasting are unlikely to result from this action. In addition, potential impacts resulting from tree harvest and road construction would be mitigated to reduce the potential for measurable sediment delivery to streams, by implementing Best Management Practices (BMPs) (EA p. 19).</p>
5. Maintain and restore the sediment regime under which system evolved.	<p>Short-term localized increases in stream sediment can be expected during reconstruction of stream crossings and restoration of the tributary near the 7-6-28 road (EA p. 11), but Best management practices (BMPs) and mitigation measures would be implemented to limit acceleration of sediment delivery to streams in the project area.</p> <p>Tree removal would not occur on steep, unstable slopes where the potential for mass wasting adjacent to stream reaches is high. Therefore, increases in sediment delivery to streams due to mass wasting are unlikely to result from this action (EA, p. 11).</p> <p>Project design features would maintain the physical integrity of the hill slopes and channel; no long-term alteration of the current sediment regime is expected.</p>
6. Maintain and restore in-stream flows.	<p>A Level 1 and Level 2 analysis for increases in peak flow and risk to aquatic resources was conducted using the Washington State DNR watershed analysis methods. Details of the analysis are contained in the project files (<i>Hydrology Report</i>). In summary, there is a low probability that the proposed action would contribute to cumulative effects to peak flows (EA, p. 12).</p>

ACS Objective	How The Proposed Action Meets the ACS Objective
7. Maintain and restore the timing, variability and duration of floodplain inundation and water table elevation in meadows and wetlands.	<p>The proposed project would not alter existing patterns of floodplain inundation or water table elevation as it would have no effects or only negligible short-term negative effects on existing flow patterns and stream channel conditions. Over the long term, reductions in stand density would likely increase riparian forest health and tree size. This would lead to increased large wood recruitment for stream channels, an important factor in proper channel function. Additional large wood in project area channels would ultimately slow stream velocity, increase retention of organic material, capture bedload, and improve aquatic habitat.</p> <p>There are no meadows or wetlands in the proposed project area.</p>
8. Maintain and restore the species composition and structural diversity of plant communities in riparian zones and wetlands to provide thermal regulation, nutrient filtering, and appropriate rates of bank erosion, channel migration and CWD accumulations.	<p>The actual riparian areas (as defined by criteria in EA project file, <i>Riparian Reserves Report</i>) along streams would be excluded from treatment, by designating stream protection zones, and only the upslope portions of the Riparian Reserves would be included in the density management treatment.</p> <p>Stream protection zones and residual trees would continue shading streams.</p> <p>Structural components of late-seral forests (large trees, multiple canopy layers, large hard snags, heavy accumulations of down wood, and species diversity) are generally lacking in the young stands surrounding and including the project area. In addition to protecting actual riparian vegetation, the proposed project would restore the species composition and structural diversity of plant communities by enhancing conditions for understory development (structural diversity), increasing the proportion of minor species in the stand (species diversity), and increasing growth rates on remaining trees.</p>
9. Maintain and restore habitat to support well distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species	<p>Habitat to support well distributed riparian-dependent and riparian associated species would be restored by reducing overstocked stands, increasing tree species diversity, and altering forest structural characteristics.</p> <p>Density management within the Riparian Reserves would enhance stand conditions, growing trees faster than if the stand were to grow naturally. This would increase the potential for high quality in-stream large woody debris.</p> <p>Species linked to Riparian Reserves issues are mostly associated with late-seral forest conditions, which would be enhanced within this stand with negligible affects to existing function of the local Riparian Reserves corridors. Development of stand and individual tree characteristics desirable for riparian and old growth associated species would be accelerated by restoring structural complexity to the stands and by accelerating development of desired tree characteristics (increased diameter and increased crown depth/width).</p>